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FLESHY ANNUAL PASTURES IN CANADA

FORAGE CROP DIVISION
CENTRAL EXPERIMENTAL FARM, OTTAWA

G. P. McROSTIE,
DOMINION AGROSTOLOGIST

R. I. HAMILTON; F. DIMMOCK; S. E. CLARK;
AGROSTOLOGISTS



GROWING FAT ON RAPE AT SCOTT, SASKATCHEWAN

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FLESHY ANNUAL PASTURES IN CANADA

INTRODUCTION

Fleshy annual pasture crops occupy a permanent place in the regular farm rotation in many European countries. In Canada, however, they are not yet utilized to the extent that their value warrants.

The object of this publication is to bring to the attention of the farmers of Canada general information concerning the crops in question in the hope that such information may stimulate their more general use.

CROPS INCLUDED

RAPE.—The wild plant is an annual but the cultivated forms used for forage purposes are mainly biennials. There are several varieties of rape, the leaves of all of which resemble somewhat those of the Swede turnip, being more or less fleshy, smooth, irregular in outline, undulated and covered with a fine bluish bloom. The roots resemble those of the cabbage plant. The height of the plant as grown at the Central Experimental Farm at Ottawa varies with variety and season from one to three feet.

The most commonly grown variety in Canada is the Dwarf Essex.

KALE.—The varieties of kale used for forage are practically all coarse-growing sorts. The stems are considerably coarser and more succulent than those of the rape varieties. The fleshy interior of the stem has a taste somewhat similar to the flesh of kohlrabi. The leaves of the common varieties resemble those of rape very closely. The leaves of the curled sheep kale, or rape kale as it is sometimes named, differ markedly from those of either the rape or common kale in having extensively subdivided undulating margins quite similar in type to the leaves of some varieties of lettuce.

The varieties of kale range in height from twenty-two inches to forty inches.

CABBAGE.—The general appearance of cabbage is too commonly known to need description here. Varieties of both the Savoy (wrinkled-leaf) and Drumhead (smooth-leaf) types are used as forage plants as well as for human consumption. In the former capacity they make a succulent, palatable and profitable addition to our annual pastures.

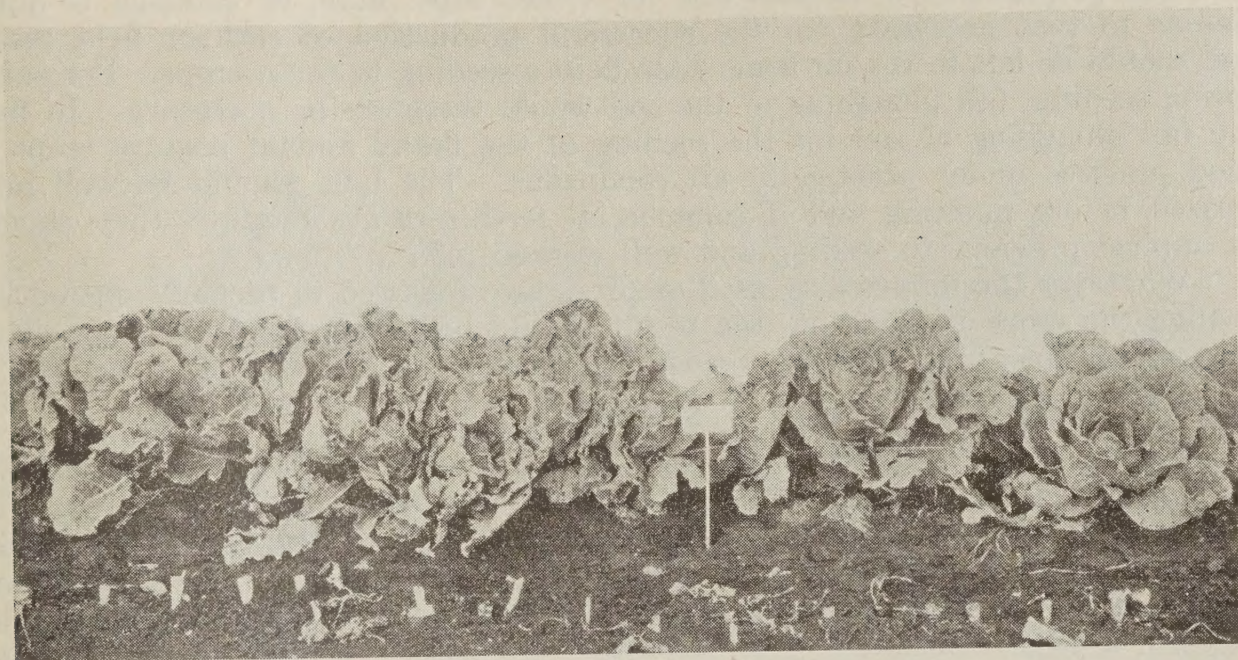
CLIMATIC AND SOIL REQUIREMENTS

All the types of fleshy annual pastures under discussion thrive under a great variety of climatic and soil conditions. All, however, give best returns when sown on moist and friable soils rich in plant-food and under climatic conditions where extended drought is not prevalent.

In general, fleshy annuals may be expected to produce a paying crop under soil-conditions suitable for the production of turnips, cabbages, cereal grains or corn. The crops in question are heavy feeders on soil-nitrogen and should consequently occupy the same position in the farm rotation as field roots or other hoed crops.

Although rape, kale and cabbage are all heavy feeders on soil-moisture, it is surprising how well they yield under conditions where summer rainfall is very light. This is particularly true of the rape varieties. There are, in fact, few sections of Canada with the exception of the drier areas of southwestern Saskatchewan and Alberta or the interior valleys of British Columbia, in which profitable crops of rape cannot be secured.

New land may be used to advantage for the growing of the crops under consideration, as a profitable crop is quite certain under such conditions, and any stumps or roots left in the soil do not interfere unduly with harvesting or



DRUMHEAD SAVOY CABBAGE (CANNELLS)



IMPROVED THOUSAND-HEADED KALE

pasturing. Muck soils also frequently produce a more profitable crop of the fleshy annuals than of other types of forage crops.

PREPARATION OF THE SEED-BED

The preparation of a seed-bed for either rape, kale, or cabbage is quite similar to that necessary for the successful production of corn or field roots. Sod should be left to rot for some time before seeding to these crops. For early spring seeding, fall ploughing of the sod would therefore be necessary. In fact the fall ploughing of sod for the seeding of the fleshy annual pasture crops is good practice under practically all conditions. The land should be well pulverized before planting and if commercial fertilizers are required they should be applied previous to seeding and well worked in.

Whatever the implements used or procedure followed in preparation for the seeding the crops in question, the result should be a deep, mellow seed-bed as free as possible from noxious weeds.

SEEDING

TIME.—The seeding season extends from as soon as the ground is suitable for sowing the grain crops in the early spring until the latter part of July. In districts where the midsummer months are apt to be very dry, the later seedings would of course be impracticable. Rape and kale under favourable growing conditions will be ready for pasturing in about six weeks after seeding, while the pasture cabbage will take two or three weeks longer. The stockman can therefore determine the time of seeding that will bring the crop into pasturing conditions at the time when it is most needed and that will ensure a sufficiently long pasturing period to give profitable returns.

METHOD OF SEEDING.—The three kinds of crops under discussion may each be seeded either broadcast or in rows.

Broadcast seeding entails less labour in after-treatment, and where the crop is to be used for soiling or pasturing, a thin broadcast seeding usually gives a fairly satisfactory crop, providing that the ground is clean and soil-moisture plentiful.

The method of seeding in rows is on the whole more desirable because of the following distinct advantages. (a) Less seed is required. (b) A more rapid and vigorous growth is obtained. (c) Where weeds are present an opportunity is afforded to keep them in check by cultivation. (d) The cultivation of the crop helps retain soil-moisture. (e) A greater proportion of leaf to stem is obtained. (f) There is less waste in pasturing, as the animals follow the rows while eating, consequently much less fodder is tramped down.

The rows are planted at from 20 to 36 inches apart. The 20-inch seeding, however, is too close for effective cultivation and the 36-inch seeding is wasteful of land. Twenty-four to 28-inch seeding is usually desirable because this distance is sufficiently far apart for cultivation and at the same time gives a yield per row very nearly as large as when the rows are spaced farther apart.

The seeding of rape with a nurse-crop of any kind has not proven satisfactory in the great majority of cases where this method has been tried.

RATE OF SEEDING.—For broadcast seeding 4 to 5 pounds to the acre is quite sufficient, while for row seeding 2 to 3 pounds to the acre will give a thick stand. A little less than a two-pound seeding in rows 30 inches apart at the Central Experimental Farm has given some excellent yields.

USES OF THE CROP

AS A PASTURE.—The principal use of fleshy annual pastures in Canada as yet is as a pasture. In this capacity they have been found quite satisfactory for sheep, swine and cattle, principally young cattle or fattening steers. Grown in poultry runs, these crops also constitute a satisfactory free-range food for most kinds of poultry.



GREEN MARROW-STEMMED KALE



GIANT DRUMHEAD CABBAGE (CANNELLS)

It is claimed that animals pasturing on rape require a greater amount of salt than usual and that this should be freely supplied.

In the instance of cattle and sheep there appears to be some danger of bloating unless precaution is exercised to prevent this. Growers of these crops claim that if the animals are not allowed to begin pasturing when hungry especially when the plants are wet with dew or rain or frost, that bloating may be entirely avoided. Once accustomed to eating these crops little danger of bloating exists.

AS A SOILING CROP.—Instead of being utilized as a pasture the fleshy annuals under consideration may be cut green and fed directly to the same types of animals. Dairy cows may also be included in this category for soiling purposes, but good judgment must be exercised as to the time of feeding if undesirable odours are not to affect the quality of the milk.

Any of the three crops are also greatly relished by poultry and could be much more widely fed in the poultry-plant.

AS A WEED DESTROYER.—Because of the fact that the varieties of both rape and kale may be planted profitably quite late in the spring they are frequently recommended as aids in eradicating weeds. The land to be cleaned may be ploughed early and cultivated until the latter part of June which in itself results in the destruction of large numbers of weeds. Either rape or kale may then be sown, and as they soon cover the ground, further growth of weeds will be largely prevented by shading.

TABLE No. 1.—FLESHY ANNUAL PASTURE CROPS TESTED AT THE CENTRAL EXPERIMENTAL FARM IN 1924 AND 1925

| Variety | Source | 1924 Green yield per acre | 1925 | | | | | |
|--|---------------------------------|------------------------------------|----------------------------|-------------------------------------|--|----------------------------|-------------------------------------|--|
| | | | Harvested August 27 | | | Harvested October 6 | | |
| | | | Green yield per acre | Dry- matter yield per acre | | Green yield per acre | Dry- matter yield per acre | |
| | | tons lb. | tons lb. | tons lb. | | tons lb. | tons lb. | |
| Cannell's Giant Drum Head cabbage..... | Cannell & Sons..... | - - | 14 460 | 1 948 | | 36 234 | 3 669 | |
| Improved 1,000 Headed kale..... | Sutton's, England..... | 14 1,492 | 16 881 | 1 1,480 | | 3 1,482 | 3 559 | |
| Cannell's Green Marrow Stem kale..... | Cannell & Sons..... | - - | 14 72 | 1 761 | | 31 382 | 3 188 | |
| Large Seeded Winter Common Essex rape.... | Vilmorin-Andrieaux & Co..... | - - | 19 720 | 1 1,894 | | 24 486 | 2 1,278 | |
| Small Seeded Turnip Rape or German Winter rape. | Vilmorin-Andrieaux & Co..... | - - | 12 1,701 | 1 1,031 | | 26 272 | 2 809 | |
| Marrow Stem kale..... | Sutton's, England..... | - - | 14 1,186 | 1 620 | | 26 896 | 2 790 | |
| Large Seeded Winter Umbrella rape..... | Vilmorin-Andrieaux & Co..... | - - | 18 881 | 1 1,416 | | 25 616 | 2 663 | |
| 1,000 Headed kale..... | Sutton's, England..... | 16 137 | 12 1,991 | 1 909 | | 17 569 | 2 603 | |
| Broad Leafed Essex rape.. | Garton's, England..... | - - | 22 44 | 2 70 | | 21 1,417 | 2 576 | |
| Cannell's Rape kale..... | Cannell & Sons..... | - - | 11 167 | 1 498 | | 19 855 | 2 554 | |
| Cannell's Drum Head Savoy cabbage..... | Cannell & Sons..... | - - | 12 1,459 | 1 610 | | 19 193 | 2 255 | |
| Curled Sheep kale..... | Sutton & Sons..... | 18 138 | 13 136 | 1 492 | | 18 763 | 1 1,819 | |
| Webb's Green Stemmed Marrow kale..... | E. Webb & Sons..... | 18 461 | | | | | | |
| Sutton's French Marrow kale..... | Sutton & Sons..... | 18 268 | | | | | | |
| Sutton's Green Stemmed Marrow kale..... | Sutton & Sons..... | 16 718 | | | | | | |
| Webb's Purple Stemmed Marrow kale..... | E. Webb & Sons..... | 16 267 | | | | | | |



BROAD-LEAFED ESSEX RAPE



CURLED SHEEP KALE

VARIETIES AND YIELDS

The varieties of rape, kale and pasture cabbage, listed in table 1, have been tested for two years at the Central Experimental Farm. In 1924 only the green yields are reported but in 1925 both green yields and absolute dry matter were determined. Two cuttings were made a little over five weeks apart in order to determine the loss due to early harvesting.

A few interesting facts are indicated by table 1. In the first place the very high moisture-content, as shown by the difference between the harvested weight and the absolute dry matter, explains why it is very difficult to cure the fleshy annuals satisfactorily. This extreme succulence, however, appears to be one of the chief reasons why these crops give such satisfactory results when pastured or fed green.

A second fact worthy of consideration is the marked increase in yield of the different lots at the later harvesting period. For soiling purposes it would therefore be advisable to plant at as early a date as possible in order to secure the largest yields when the crop is to be utilized.

All of the varieties tested made a satisfactory growth. Seed of suitable varieties of rape, kale and pasture cabbage is available commercially.

SUMMARY OF TRIALS ON EXPERIMENTAL FARMS

The suitability of the fleshy annual pasture crops for a wide range of soil and climatic conditions is instanced by the following extracts from the reports concerning the crops in question from some of the Dominion Experimental Farms and Stations:—

Charlottetown, P.E.I.—“Rape proved entirely satisfactory as a pasture for steers in the late fall.”

Nappan, N.S.—“Rape does well here and affords a good pasture for hogs.”

Kapuskasing, Ont.—“The fleshy annual pasture crops do not appear to be as satisfactory as red clover or alfalfa for pasturing purposes.”

Brandon, Man.—“The results from this Farm would indicate that rape has an important place as a quick pasture for cattle, sheep, and hogs. It recovers quickly after close feeding and stands considerable frost. Kale and pasture cabbage have not been tested.”

Indian Head, Sask.—“With reference to rape, I may say that this crop is quite widely grown throughout the West and may be regarded as a splendid pasture crop for lambs and hogs. According to our experiments, hogs have made exceptionally good gains on rape fed in conjunction with a little grain.”

Scott, Sask.—“Rape is the only fleshy pasture crop we have used at this Station and it works out well as a pasture to wean lambs as well as pasture for brood sows and growing pigs. For growing pigs rape saves twenty-five pounds of grain per hundred pounds gain, and it is calculated that in an average season one acre would be sufficient for thirty head of hogs and that the returns from the land used as hog-pasture would amount to eighteen dollars per acre.”

Lacombe, Alta.—“Rape is the only crop of this nature that we have used in our hog-pastures, and from results obtained at this Station rape has its particular value as a late fall pasture for hogs. It will supply a large yield of succulent forage until late fall. It does not appear to be quite as palatable as peas, alfalfa, oats or fall rye.”

Invermere, B.C.—“Very heavy crops of Broad-leafed Essex rape, Dwarf Essex rape and Thousand-headed kale have been secured here (under irrigation.) These crops were not damaged by three degrees of frost.”

Agassiz, B.C.—“Rape has made a satisfactory pasture for sheep. A great deal of kale is grown as a soiling crop in the lower Fraser valley and is used extensively for chickens and to a less extent for cattle.”

Sidney, B.C.—“Kale is the only fleshy annual used extensively on Vancouver Island. It is looked on as one of the best available green foods for poultry and also seems to be one of the best milk-producers that we have tried.”